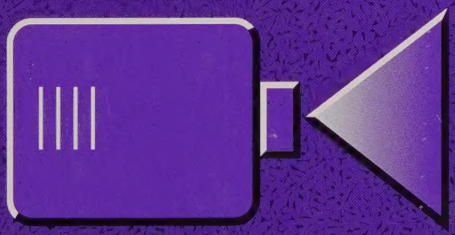
USER'S MANUAL



LITEPRO™ LCD
PROJECTION SYSTEM

InFocus®
SYSTEMS

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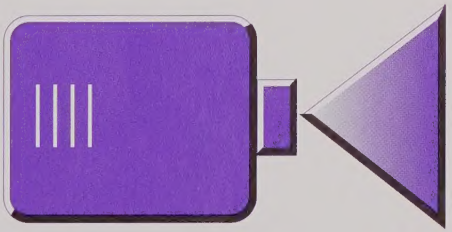
USER'S MANUAL



LITEPRO™ LCD
PROJECTION SYSTEM

InFocus®
SYSTEMS

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Safety Summary

Read the following caution statements before operating the LitePro.

The LitePro contains no user-serviceable parts or fuses. Refer all LitePro service to a qualified In Focus Systems service center. Failure to do so can result in electrical shock, serious injury, or unrepairable damage to the LitePro.

The rear of the LitePro, especially near the lamp change knob and lamp access door, can become extremely hot during and after use. Use extreme care and let the LitePro cool for 20 minutes before replacing a lamp.

Use only the power cord supplied with your LitePro. While appearing to be similar, other power cords have not been safety tested at the factory and may not be used to operate the LitePro. For a replacement power cord, contact your LitePro dealer.

Never operate the LitePro with the lamp access door removed. Operating the LitePro with the door removed can disrupt airflow inside the unit and cause overheating.

Do not remove the projection lens body from the LitePro. The inside of the lens body and the inside surfaces of the LitePro do not require cleaning.

The LitePro uses a 36V, 400W high-intensity projection lamp (ANSI lamp number EVD, 36V, 400W). Replacing the projection lamp with any other projection lamp can cause overheating or unacceptable image quality. Use only the projection lamps specified by In Focus Systems, Inc. or an authorized In Focus Systems dealer or repair center.

Do not block the LitePro cooling fan or free air movement under and around the LitePro. Loose papers or other objects may not be nearer to the LitePro than 4" on any side.

FCC Warning

This equipment has been certified to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with Class A limits may be attached to a computer that complied with Class A limits. When connecting a peripheral device, a shielded input/output cable with molded ferrite bead is required to ensure compliance with FCC rules. The shielded cables that must be used are supplied with the equipment. Operation with non-certified peripherals or RF-suppressed cables is likely to result in interference to radio and TV reception.

Instructions to User

This equipment generates and uses radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio and television reception. It has been tested and found to comply with the limits for a class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. If this equipment does cause interference to radio or television reception, the user may try to correct the interference by one or more of the following measures:

- Reorientation of the receiving antenna for the radio or television
- Relocate the equipment with respect to the receiver
- Plug the equipment into a different outlet so the equipment and receiver are on different branch circuits
- Fasten cables using mounting screws to ensure adequate EMI controls

Acknowledgements

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Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das
Datenprojektionsgerät, Model LitePro/LitePro LS
(Gerät, Typ, Bezeichnung)
in Übereinstimmung mit den Bestimmungen der
Vfg 1046/84
(Amtsblattverfügung)
funkentstört ist.
Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

IN FOCUS SYSTEMS, INC. Tualatin, Oregon USA
(Name des Herstellers/Importeurs)

Declaration of the Manufacturer or Importer

We hereby certify that the
Presentation Management System, Model LitePro/LitePro LS
(Equipment, Type, Model No.)
is in compliance with
Vfg 1046/84
(Postal Regulation No.)
and is RFI suppressed.
The marketing and sale of the equipment was reported to the German Postal Service. The right to retest this equipment to verify compliance with the regulation was given to the German Postal Service.

IN FOCUS SYSTEMS. INC. Tualatin, Oregon USA
(Name of Manufacturer or Importer)

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1

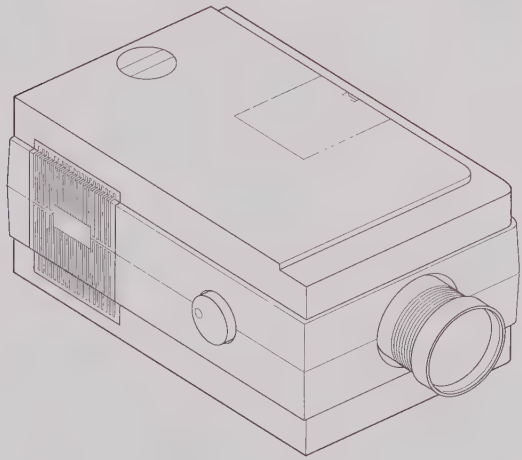
INTRODUCTION & KEY FEATURES

Introduction and Key Features

Product Description

In Focus presents the LitePro, a full-color portable data projector. The LitePro delivers brilliant colors and computer compatibility in a compact, lightweight package.

Designed for convenience, the LitePro replaces bulky, complex, and fragile CRT projection systems with a stand-alone projector that is portable, easy to use, and durable. With the LiteShow option installed, the LitePro becomes a completely self-contained presentation system.



The LitePro

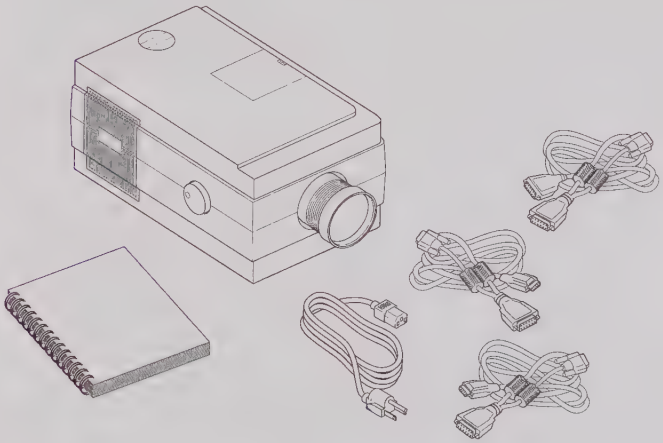
The LitePro is easy to use. Just place it on a tabletop and connect it to your computer's graphics port with one of the three supplied cables. The data and graphics normally displayed on the computer monitor will be projected in images seen on the screen.

The LitePro can project 4913 brilliant colors in 640 x 480 pixel resolution. It is compatible with Macintosh II series (including the Macintosh LC) and Macintosh series, IBM-PC and compatible desktop and laptop computers in CGA, EGA, and VGA modes, and with the IBM PS/2 in VGA.

A high-quality product, the LitePro is backed by a limited one-year warranty. If any problem or question should arise, our customer service staff is ready to help you. Just call 1-800-327-7231 between 7 a.m. and 4 p.m. PST Monday through Friday.

Shipping Container Contents

The following components are included with the LitePro:



LitePro projector
User manual
9-pin CGA, EGA, Macintosh cable
15-pin VGA cable
15-pin Mac II, LC, Apple IIgs cable
Power cord
Soft carrying case (not shown)
Registration packet (not shown)
Lens cover (not shown)

If your LitePro was purchased with the factory installed LiteShow option, the shipping container also holds a remote control unit, two 3.5" disks, and the LitePro LS Software manual. For information on working with the LitePro LS option, refer to the separate LitePro LS Software manual.

If any of these pieces is missing when you first open the box, contact your dealer immediately.

General Guidelines

- Do not block the LitePro cooling fan or obstruct the free air movement under and around the LitePro. Loose papers or other objects may not be nearer to the LitePro than 4" on any side.
- The rear of the LitePro, especially near the lamp changing knob and lamp access door, can become extremely hot during and after use. Use extreme care and let the LitePro cool for 20 minutes before replacing a lamp.
- Never touch the projection lamp with your fingers. When replacing a projection lamp, always use a cloth between the fingers and the lamp. Natural skin oils can concentrate heat and quickly destroy a new projection lamp. Refer to the section *Replacing a projection lamp* in the Maintenance and Troubleshooting chapter before attempting to change the lamp.
- Never operate the LitePro with the lamp access door removed. Operating the LitePro with the door removed can disrupt airflow inside the unit and cause overheating.
- The LitePro projection lens can be easily cleaned with a soft cloth and standard, non-abrasive glass cleaner. Apply the glass cleaner sparingly to the cloth and carefully wipe the lens. Do not use excessive amounts of glass cleaner or pressure on the lens. Do not use abraisive glass cleaners, solvents, or other harsh chemicals.
- When it becomes dirty, clean the fan filter by rinsing it in clear water and shaking it or blowing it dry with compressed air. Do not reinstall the fan filter in the LitePro unless it is completely dry. If you are replacing the fan filter, use only an In Focus Systems authorized replacement filter. Refer to the section *Cleaning the fan filter* before attempting to clean or replace the fan filter.

- Avoid leaving the LitePro in direct sunlight or extreme cold for extended periods of time.
- Avoid scratching the LitePro projection lens with sharp metal objects.
- Turn the LitePro off and disconnect the power cord when not in use.
- Handle the LitePro as you would any product made of glass. Be especially careful not to drop it.

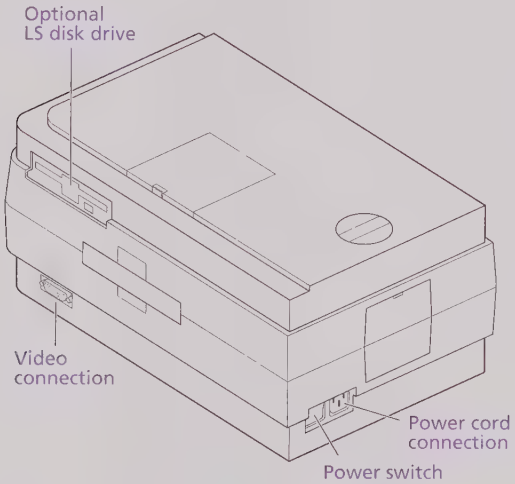
2

SET-UP

INSTRUCTIONS

Setup Instructions

This chapter explains the connections you must make between the three pieces of equipment you will use—the LitePro, your computer, and the monitor. Be sure to follow the instructions for your type of computer.



The LitePro and its cable connections.

Connecting the LitePro to your computer

To make the LitePro work with your computer you will make three connections. You'll connect the computer's graphics card to the LitePro, the LitePro to the computer's monitor, and the power cord provided with the LitePro to the wall outlet.

The connection steps you must follow are in the next two sections. The pages following the steps illustrate the cable connections for your computer configuration.

Setting up the LitePro for projection

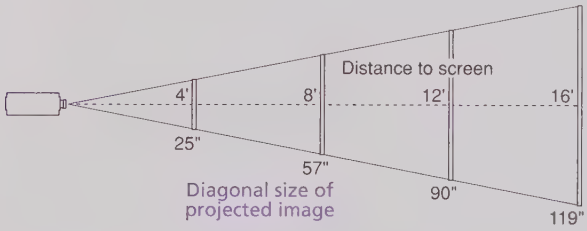
To set up the LitePro, follow these steps:

1. Set the LitePro near your computer on a flat surface, such as a tabletop.

Note:

Do not block the LitePro cooling fan or obstruct the free air movement under and around the LitePro. Loose papers or other objects may not be nearer to the LitePro than 4" on any side.

The LitePro can be set for either front or rear projection (see *User menu* in the next chapter for more information). In either case, the distance from the LitePro lens to the projection screen determines the size of the projected image, as shown in the figure.

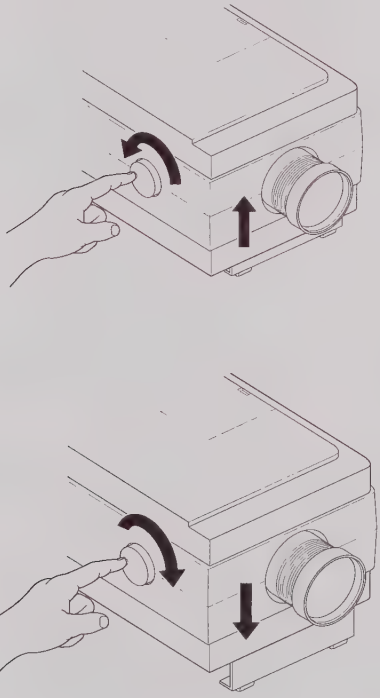


2. Plug the power cord first into the LitePro and then into the wall outlet.

Note:

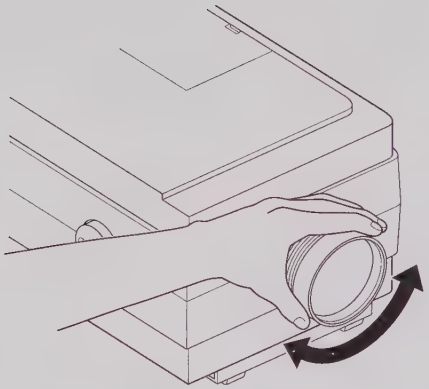
Always use the power cord provided with the LitePro. The LitePro accepts power from 110Vto 240V, 50 or 60 Hz sources. When disconnecting the LitePro, always remove the power cord from the wall outlet first, then from the LitePro.

3. Raise the front of the LitePro to adjust projected image height by rotating the knob counterclockwise. Lower it by rotating the knob clockwise. If further elevation is necessary, swing down the two extension feet on the bottom of the front leg.



4. Turn the LitePro on but don't connect a video signal yet. This displays a test pattern on the projection screen.
5. Rotate the height adjustment knob in either direction to fine adjust the height of the projected image.
6. Focus the LitePro by rotating the lens until the image is clear and sharp (turn it in for longer and out for shorter focus distances).

Rotating the lens



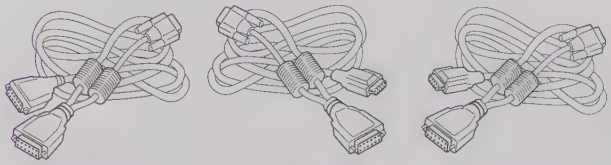
Be careful when rotating the lens. Rotating the lens too far out can drop it out of the LitePro. A minimum projection distance of 4' will allow the LitePro to focus properly while allowing its lens to remain secure.

7. Adjust the contrast (the contrast button is on the kepad beneath the access door on top of the unit) for best color saturation.
8. Switch off the LitePro.

Connecting the LitePro to a computer

This section describes how to connect your LitePro to a computer. The three cables supplied with the LitePro are:

- A VGA/MCGA loop-through cable
- An EGA/CGA/Macintosh loop-through cable
- A Macintosh II/Macintosh LC loop-through cable



15-pin Mac II 15-pin VGA 9-pin EGA

These cables are used to connect the computer's video port and monitor to the LitePro. Each cable has a 26-pin connector for the LitePro, a connector that matches the video card, and a connector for the monitor. The LitePro receives a video signal from the computer, amplifies it, and sends it to the monitor.

This and the following sections describe how to connect the LitePro to your computer make and model.

1. Follow the instructions in this table to select the proper cable for your computer:

Computer	Cable	Looks like
IBM with VGA graphics card or IBM PS/2 with built-in VGA graphics	15-pin	
IBM or compatible with EGA or CGA graphics card or classic style Macintosh	9-pin	
Macintosh II Series or Macintosh LC	15-pin	

2. Plug the 26-pin connector into the LitePro.

Note:

Skip step 3 if you are connecting to a laptop computer or a classic-style Macintosh.

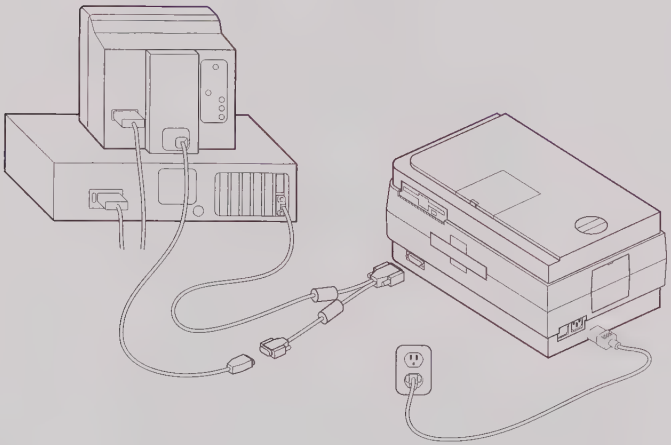
3. Unplug the computer monitor cable from the graphics card and plug the 15- or 9-pin connector (the one closest to the 26-pin LitePro connector) into the monitor.
4. Plug the other 15- or 9-pin connector into the computer's video port.
5. Tighten the thumb screws on all cable connectors to ensure solid grounding.

6. Switch on the LitePro. There should be an image on the screen. If there is no image, refer to the troubleshooting guide later in this manual.
7. Position the LitePro so the image fills the screen and focus the image, if necessary.
8. For more information on adjusting your LitePro's projected image, go to the chapter *Adjusting the LitePro.*

VGA display systems can display 16 or 256 colors at a time from a palette of 262,144 colors. The LitePro can display up to 4,913 colors, rendering almost any image with clarity and detail.

CGA and EGA systems can display only 16 colors on screen at a time. Consequently, the LitePro displays 16 colors when connected to a CGA or EGA system.

Connecting the LitePro to a desktop computer

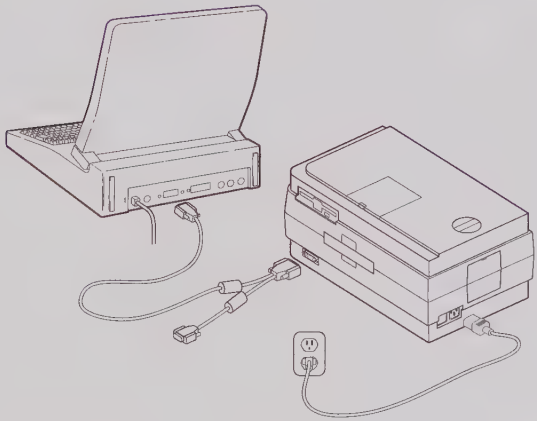


LitePro connections to a desktop computer

This figure shows how to connect the LitePro to typical desktop computers, including CGA, EGA, VGA, Macintosh II and Macintosh LC setups. The ends of cables are labeled (for example, LCD, Monitor, VGA, etc.) to show where they connect.

Connecting the LitePro to a PC-compatible laptop computer

Typical PC compatible laptop connections

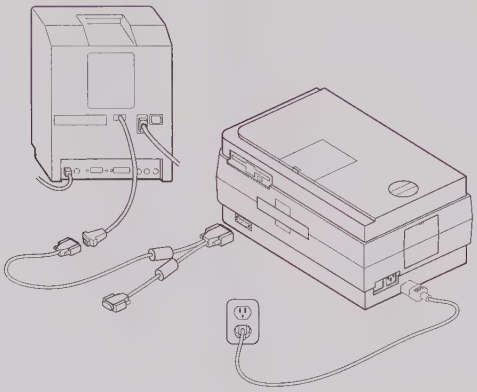


Note that the short end of the loop-through cable is not used in this setup.

When the external video port is activated, many laptop computers automatically turn off their internal displays. For information on activating the external video port, see your computer manual or Appendix C for appropriate activation commands.

The LitePro is not compatible with the Macintosh laptop. Do not attempt to connect the LitePro to a Macintosh laptop. Doing so may cause damage to both the LitePro and the Macintosh laptop.

Connecting the LitePro to a classic-style Macintosh computer



Typical classic-style Macintosh connections

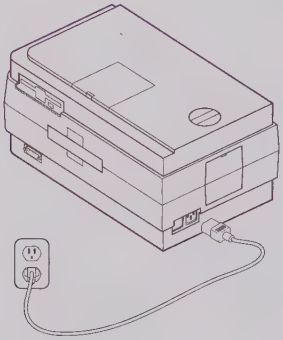
Note that the short end of the loop-through cable is not used in this setup.

Classic-style Macintosh computers do not have a video connector, so you must install an internal adapter. The Macintosh 128, 512, and Plus require an A10 adapter. The SE and SE/30 require an A20, while the Macintosh Classic requires an A21 adapter. Call your In Focus Systems dealer for more information.

Note:

If your LitePro contains the LiteShow option, the LitePro captures, saves, and projects monochrome images from the classic-style Macintosh, but does not redisplay the images on the Macintosh monitor.

Using the LitePro LS with its internal LiteShow as the Display Source



1. Set up the LitePro LS as described earlier in this chapter.
2. Insert your presentation disk into the disk drive.
3. Begin your presentation by pressing Next on the remote control.

If the presentation is set for timed advance, it starts automatically. See Presenting a Show in the *LitePro LS Software User's Manual* for more information.

3

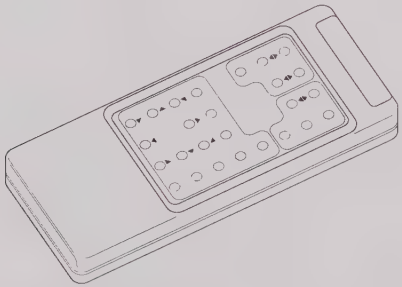
ADJUSTING THE LITEPRO

Adjusting the LitePro

Now, bring up the software you want to project. You should be projecting an image on the screen. This section shows you how to adjust the LitePro to get clear, crisp images. You can adjust the LitePro using its built-in keypad or with the optional hand-held remote control.

Remote Control

If you have purchased he LitePro LS (LiteShow option), a hand held remote control will be included. The LS remote control has key functions that let you adjust the images projected on the screen. The LS remote control duplicates the key functions, contrast, level and reverse that are on the LitePro. When you use the remote control, be sure to point the remote at the front of the LitePro. The amber indicator LED will flash with every valid key press of the remote control.



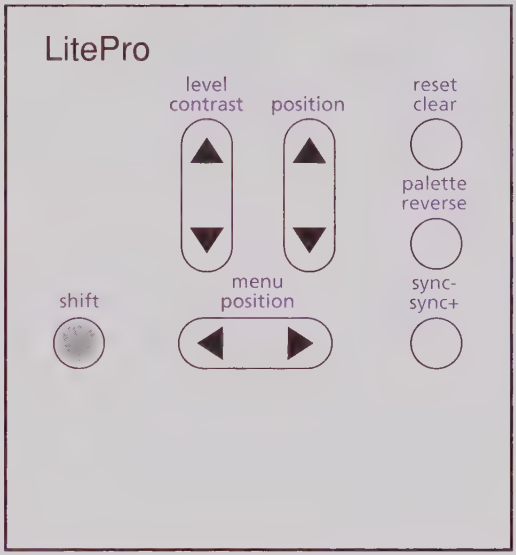
Remote Control

Control button functions

The LitePro has ten control buttons in a covered panel. A shift button, located in the lower left corner, gives several of these buttons a dual function (non-shift functions are printed in grey, shift functions in blue). Six of the buttons are combined as dual-action rocker switches.

Some buttons auto-repeat when held down; that is, pressing and holding these buttons causes them to constantly send instructions. Other buttons toggle through a fixed number of settings and require you to press the button each time to trigger the next setting.

Keypad



NON-SHIFT KEYS	SHIFT KEYS
Contrast (up/down)	Level (up/down)
Sync +	Sync –
Position (up/down)	
Position (left/right)	Menu (on/off)
Clear	Reset
Reverse	Palette

Non-shift control functions

To select a non-shift control function (these are labeled in grey), just press the desired command button. These functions are:

level
contrast

Contrast (up or down)

Press this button to increase or decrease the brightness of the displayed image.

Position (up or down)

Press the directional position buttons to center the image vertically on the screen.

Position (left or right)

Press the directional position buttons to center the image horizontally on the screen.

Clear

Pressing the Clear button cleans unwanted random patterns that may have appeared on the screen outside the image area. In some cases, positioning the image leaves a trail of data. Use the Clear button to remove this unwanted data.

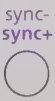
You may also use this button to blank the screen by clearing the test pattern to all black or all white. Disconnect the video signal to bring up the test pattern. Press Reverse to bring up a dark background. Press Reverse twice to bring up a light background. When you have the background you want, press Clear.

Reverse

If you wish to reverse the way you see an image, light letters on a dark background or dark letters on a light background, press the Reverse button. Pressing it again causes the display to return to the original image. All colors will be switched with their complements. See Appendix A for more information on working with colors.

Sync +

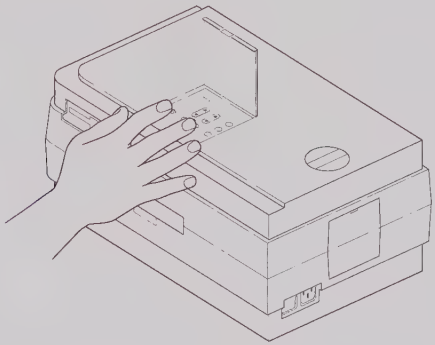
Each time Sync + is pushed, it fine tunes the LitePro to match signals from the graphics system. Sync + continuously cycles forward through the 32 possible sync positions.



Shift-activated control functions

To select a shift-activated control function (these are labeled in blue), hold down the shift button and press the desired command button. These functions are:

Holding down Shift and pressing a command button



shift sync- sync+

Sync–

Each time SYNC – is pushed, it fine tunes the LitePro to match signals from the graphics system. SYNC – continuously cycles backward through the 32 possible sync positions.

shift reset clear

Reset

The master reset function, holding down the Shift button and pressing Reset, returns the display settings (position, sync, palette, reverse, and level) to factory defaults for the video mode being displayed.

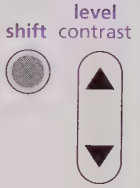
The Reset function also resets the contrast for all modes when the menu is up.

The Reset function does not affect Text Mode, Text Slice, EGA 64 or color bars unless the menu is displayed on the screen. If the menu is displayed, pressing this button resets all menu items and display settings (including color bars) to factory default values.

Palette

Pressing the Palette button selects the displayed color palette size. This button lets you switch between 8-color, 64-color, and 4913-color displays. In some cases, especially when displaying text applications that use eight or fewer colors, limiting the palette to eight colors gives brighter, more saturated colors.

Level (up and down)



The Level button adjusts the color mapping to compensate for differences between computers. Just as colors look different on different monitors, there will always be some color differences between the monitor and the LitePro. If the color match between the monitor and the LitePro is not satisfactory, you can adjust the level to change the mapping.

Level up or Level down increases your flexibility by allowing you to choose which color tones will be projected.

Pressing Level up increases the limits of the range of tone shown by that color. Pressing Level down causes a smaller band of tone to be shown as a given color. There are 64 level steps.

The level controls operate *only on analog video signals* such as those from VGA, MCGA, or Macintosh II display systems.

Menu

Pressing the Menu button displays the user menu, where you can adjust the initial color balance and tracking, change the text mode and language, and flip the projected image for front or rear projection. The user menu also supplies information about the video input.

After displaying the user menu, use the horizontal Position button to move between menu options and the vertical Position button to change an option. Pressing Shift-Menu (either side of the button) hides or displays the user menu.

For more information about the user menu, see the user menu section later in this chapter.

Using the Control Buttons to Make Adjustments

Now that you have reviewed the control button functions, here is the order in which you can use them to achieve the best possible projected image.

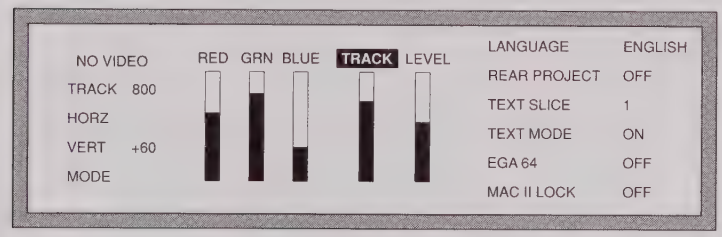
1. Press the Contrast up or down buttons to lighten or darken the image or text for the best viewing. If the colors are streaked or uneven across the LitePro screen, darken the contrast until the colors are consistent, bright, and vibrantly projected.
2. Move the image on the screen with the Position up, down, left or right buttons until it is centered.
3. Focus the LitePro until the image is crisp and clear.
4. Press Sync until the image is locked in as a solid image without shimmer or movement. This button toggles through the present settings to the specific computer graphics type. Press Sync until you get the best image.
5. For VGA, MCGA, and Macintosh II, you may need to hold down Shift and press Level up or Level down to choose the best color tones. For best results when adjusting the color level, display an image that has a wide range of colors.

   For a VGA text display, you may need to adjust the Text mode if text characters are jagged or shimmering. For more information on adjusting Text mode, see *Text mode* later in this chapter.
6. If your computer is one of the standard supported systems, your image should now be fully adjusted. But if your computer is any other type, you may see evenly spaced fuzzy vertical lines, or text may appear to be too wide or too narrow for the screen. To correct this problem, display the user menu (press Shift-Menu) and adjust the tracking.
7. You may want to press Reverse to select either light characters on a dark background or dark characters on a light background. Use the setting that best suits your graphics or text.
8. If necessary, adjust the contrast again to lighten or darken the image.

9. If you want to erase the adjustments you have made, press Shift-Reset, the master reset function, to return modes to factory set values.

User menu

Pressing the Shift-Menu buttons displays the LitePro user menu. The user menu lets you change the color balance, adjust the tracking, and control how information is displayed.



Moving through the User Menu

After you display the user menu, use the position (< >) control buttons (left and right) to move within and between option columns.

These keys are auto-repeat buttons; that is, pressing and holding these buttons causes them to constantly send instructions.

The Contrast and Level buttons are still active in Menu Mode.

Adjusting a menu option

Use the Position Up and Down control buttons to adjust menu options. These keys auto-repeat. Pressing Shift Reset when the menu is showing resets all menu items, including color adjustments, to factory default values.

Color Balance

Adjust the Contrast control to get the best colors. If the colors still need adjustment, display the menu function by pressing Shift-Menu. If you press Shift-Reset when the menu is displayed, the color balance is reset to its factory default values. Resetting to default and slightly adjusting the Contrast control is generally all the adjustment needed.

Refer to Appendix A, Working With Colors, for detailed instructions.

EGA 64

EGA 64 may affect the color brown on some EGA systems and some VGA systems when in EGA mode. If your brown displays as light red, turn on the EGA 64 setting.

The default value is OFF.

Mac II Lock

Because of variations in video signals sent by older Macintosh II computers, the LitePro LS may be unable to determine the type of Macintosh it is connected to.

The Mac II Lock selection at the lower right of the User menu lets you manually change the LitePro's video signal selection. Use this selection if the Mac II image displayed by the LitePro LS seems compressed or expanded from normal.

To use the Mac II Lock selection, display the User menu and highlight Mac II Lock. With the position up or down keys, select "II" if your LitePro LS is connected to a Mac II, or if it is connected to a Mac LC.

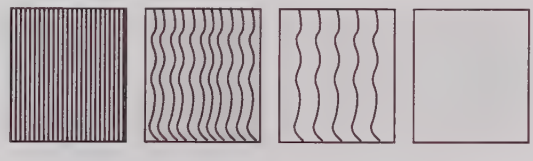
Tracking

The Tracking adjustment bar lets you match the LitePro's internal clock to different computer graphics signals. Using tracking lets the LitePro project crisp images from a range of computer

graphics systems. There are 64 tracking levels. You must adjust the tracking if the display shows evenly spaced, fuzzy vertical lines or if the projected image is too wide or too narrow for the screen.

Move the tracking bar down (lower numbers) to make the image look narrower. Move the tracking bar up (higher numbers) to make the image look wider. The default track value is shown with the video information. As you move the tracking adjustment bar up or down, the Track value changes.

Move the tracking adjustment bar up or down until the fuzzy lines move apart on the screen or disappear, or the text fits the screen. The ideal is to have no bars visible and all the projected text or graphics on the screen.



Tracking

Level Bar

The Level Bar lets you adjust color mapping to compensate for the differences in color between computers. Move the bar up to increase the limits of the range of tone depicted by a color. Move the bar down to define a smaller band of tone There are 64 level steps.

The level controls operate only on analog video signals such as those from VGA, MCGA, or Macintosh II display systems.

Video/No Video

The Video column provides information about the current video input. If video is not present, the user menu displays No Video, with no Horizontal or Mode information and the test pattern or blank screen visible in the image area.

The video information column shows the tracking setting (described previously), the horizontal sync frequency and polarity (HORZ), the vertical sync frequency and polarity (VERT), and the video mode number (MODE).

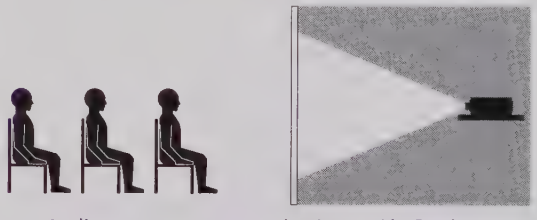
These values (except for Track) are for information only and cannot be adjusted.

Language

Menus can be displayed in either English, French, German, Italian, or Spanish. The user menu lets you choose the language. The default is English.

Rear Projection

Select ON to flip the image from left to right for rear projection screens. The default is OFF. Rear projection lets you use the LitePro without complex mirror setups for rear projection.



Text Slice

Text Slice lets you adjust VGA text characters to look their best. The LitePro discards one of nine pixels to compress the text 720 pixel display into its 640 pixel width. Text Slice lets you choose which of the nine pixels you want the LitePro to discard. Text Slice is active for only 720 text mode (VGA text, MDA text, or Hercules text) and only when text mode (see below) is on. Text Slice has no effect on characters when Text Mode is OFF. Adjust Text Slice until displayed characters are solid and fully formed.

Text Mode

The LitePro screen area is 640 pixels wide. Text that extends beyond 640 pixels may be either compressed or truncated. When text (or graphics) is compressed, it is tightly spaced to fit the display screen. Truncated text (or graphics) is not respaced to fit the display; rather, anything beyond the right edge of the screen display is not shown.

Selecting ON for Text Mode locks VGA text to solid pixels (no shimmering). CGA graphics or VGA mode 13 (320 x 200, 256 colors), however, may be compressed. Unless you regularly project CGA graphics with the LitePro, text mode should be set to ON.

Text Mode works only when text is present. For example, this mode works in VGA text but not in VGA graphics.

You are now ready to begin a presentation

Now that the LitePro is properly connected and you have adjusted the image on the screen, you are ready to begin projecting your computer data and graphics.

The projected images will be live from your computer and change as you change the computer data.

4

MAINTENANCE AND TROUBLESHOOTING

Maintenance and Troubleshooting

The information in this chapter is a guide to the cleaning and maintenance of your LitePro, as well as to locating and solving possible problems.

The LitePro contains no user-serviceable parts or fuses. Refer all LitePro service to a qualified service center. Failure to do so can result in electrical shock, serious injury, or unrepairable damage to the LitePro.

Note:

Operating the LitePro at temperatures above 90° F (32° C) can cause it to automatically shut down and begin a 30-minute cool-off period (see the appendix containing the operating specifications).

Cleaning the projection lens

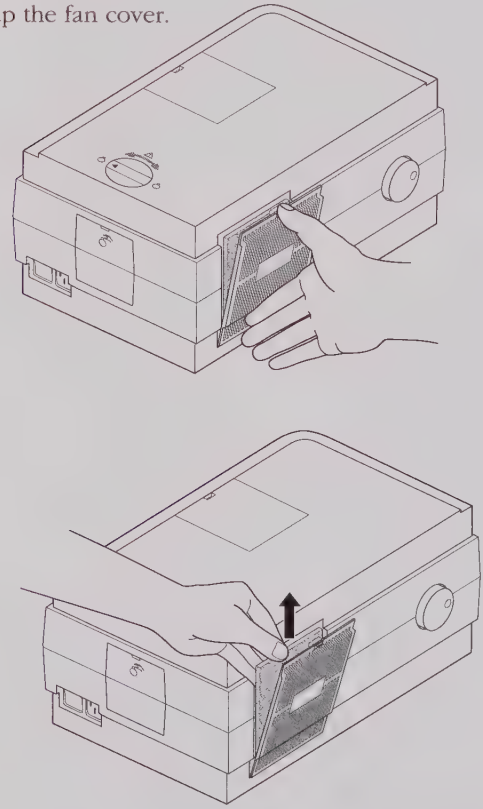
1. Handle the LitePro as you would any product made of glass. Be especially careful not to drop it.
2. Do not remove the lens body from the LitePro to clean it. Removing the lens body from the LitePro can cause it to fall, destroying the lens.
3. Should the projection lens need cleaning, you may use any normal non-abrasive glass cleaner on it. Apply the cleaner to a cleaning cloth and then wipe the lens lightly. Do not use excessive amounts of liquid. Do not use abrasive cleaners, solvents, or other harsh chemicals.

Do not remove the lens body from the LitePro. There is nothing to clean or service, either inside the lens body or the LitePro.

Cleaning the fan filter

The fan filter, located behind the access cover toward the rear of the unit on the right side, traps dust particles before they get into the LitePro. The filter must be routinely cleaned. To clean the filter, follow these steps:

1. Unsnap the fan cover.



Fan cover being unsnapped and filter being removed

2. Carefully remove the filter and clean it by washing in mild soapy water. Be sure to rinse and let the filter dry completely before re-installing in the LitePro.

How often you must clean the filter depends on your usage. Typically, you must clean the filter approximately every three to six months or if the LitePro overheats from a clogged filter.

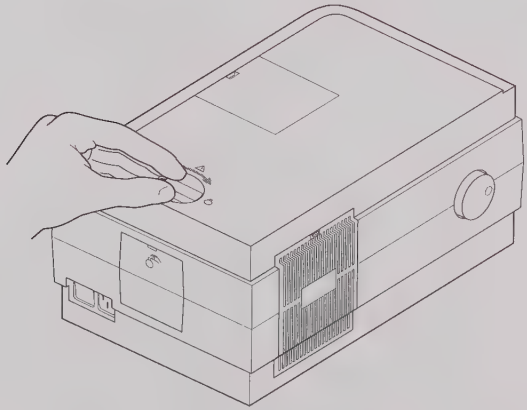
Switching projection lamps

The LitePro contains two projection lamps: one is active while the other is a standby. When the active lamp fails, it can be quickly switched with the standby via the switch knob.

Turn the projector power off, then rotate the lamp switch knob as far as it will go to activate the standby lamp. Do not force the knob. Be sure to replace the defective projection lamp as soon as possible (see *Replacing a projection lamp* for more information). Always turn the lamp change knob to rotate the lamp pointer arrow toward the front of the LitePro, but do not force it.

In some cases the projection lamp filament may fail. When a lamp filament fails, the lamp continues to show a weak light visible from the side of the projector, but it is not enough light to project an image through the lens.

Follow the same procedure as described earlier for lamp filament failures and replace the lamp after the LitePro completes its 20-minute cool-down.



Hand rotating the lamp switch knob

The LitePro uses two of any of the following 36 V, 400 W projection lamps:

- OSRAM Xenophot ALX 64663 EVD 36V 400W
- Philips 36V, 400W, 7787, EVD A1/239
- Iwasaki JC36V400W/G1, EVD A1/239

Note:

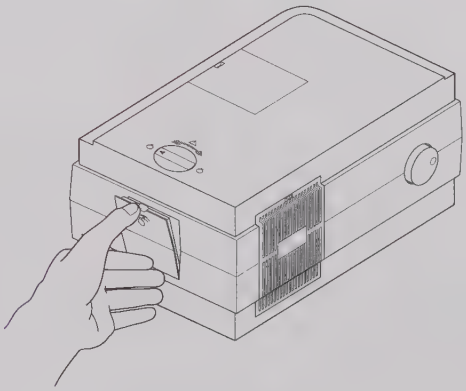
Projection lamps are warranted by the lamp Replacing a projection lamp manufacturer, not by In Focus Systems, Inc. If you have a lamp that appears to be defective, contact the lamp manufacturer for appropriate warranty action.

Changing a projection lamp requires switching the power off, allowing the LitePro to cool, and removing the lamp access door to expose the lamps. Use the following procedure to change the projection lamps.

The rear of the LitePro, especially near the lamp change knob and lamp access door, can become extremely hot during and after use. Use extreme care and let the LitePro cool for 20 minutes before replacing a lamp.

1. Switch the LitePro power off at the on/off switch and disconnect the power cord at the wall outlet.

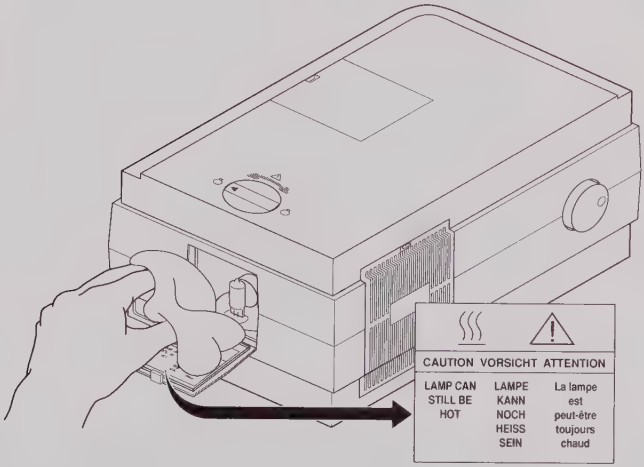
Removing the access door to expose the lamps



2. At the rear of the LitePro, remove the projection lamp access door to expose the lamps (the wire retainer prevents loss of the cover).

3. Remove the projection lamp from its socket in the LitePro (rotate the knob to expose the other lamp and remove it also, if both are defective).

4. Using a cloth between your fingers and the lamp, install a new lamp (or lamps) in the LitePro.



Removing/replacing a lamp with cloth on fingers protecting the lamp

Never touch a projection lamp with bare fingers. When replacing a projection lamp, always use a clean cloth between your fingers and the lamp. Natural skin oils can concentrate heat and quickly destroy a new projection lamp.

5. Replace the lamp access door.

Never operate the LitePro with the lamp access door removed. Operating the LitePro with the door removed can disrupt airflow inside the unit and cause overheating.

Troubleshooting Guide

Before calling your dealer for assistance, attempt to solve the problem by checking this troubleshooting guide.

Problem: **LitePro shuts off by itself during operation**

Possible causes and solutions:

You may not have power. Check to see that the power cord is plugged into the LitePro and the AC outlet and that the LitePro power switch is in the on position.

Check to see if something is blocking the fan intake (the filter side of the unit), or if there is insufficient clearance (or obstructions) on the exhaust side of the unit. The LitePro shuts itself off automatically and begins a 30-minute cool-off period if it becomes overheated (see the maximum operating temperature range specification in the Specifications appendix). The LitePro resets itself after 30 minutes.

Problem: **Nothing on screen**

Possible causes and solutions:

You may not have power. Check to see that the power cord is plugged into the LitePro and the AC outlet and that the LitePro power switch is in the on position.

The power cord may not be plugged into a live AC outlet. Check to ensure that the power cord is connected to a live AC wall outlet.

The power cord may be plugged into a power strip that is not turned on.

One or both projection lamps may be defective. Rotate the lamp switch knob to switch the standby and active lamps, or switch off the power and replace both projection lamps (see the procedure above).

Your LitePro may not be adjusted properly. Also, check and adjust the contrast and level control settings.

Problem: **Color or VGA text not being projected**

Possible causes and solutions:

Your level control may need to be adjusted. Adjust the level control up or down until the text is visible.

Your software may be displaying colors that are too similar. Set your software to increase the difference between displayed colors.

Problem: **Image not centered on screen**

Possible causes and solutions:

Adjust position to center image on screen.

Problem: **Only the test pattern is being displayed**

Possible causes and solutions:

Your LitePro video cables may not be connected correctly. Check to see that the cable is connected to the video port on the computer's graphics card.

Your computer graphics system may not be set up correctly. Check the following: your computer's color graphics card is turned on; your computer has a compatible graphics card; and the computer's external video card has been turned on.

Problem: **Image is too wide or narrow for screen**

Possible causes and solutions:

You may need to adjust the tracking to reduce or enlarge the projected image.

Check to see that your computer has a compatible graphics output.

You may be using a high-resolution display card. Make sure your computer is compatible.

Problem: **Image is out of focus**

Possible causes and solutions:

The LitePro lens is not adjusted correctly. Rotate the lens until image is in focus.

Lenses may need cleaning.

Problem: **Dark spots on projected image**

Possible causes and solutions:

Adjust the contrast to remove spots from image.

LitePro lenses may need cleaning.

Problem: **The projected colors do not match the monitor**

Possible causes and solutions:

Adjust the level and/or contrast controls. However, just as there are differences in the displays of different monitors, there will always be some differences between the computer screen and the projected image.

APPENDICES

Working With Colors

Adjusting the colors

The color balance bars have been factory-set for optimum color balance. Normally, the contrast button will be the only adjustment required.

These controls will not need to be adjusted under normal operating conditions. The controls have been factory-adjusted for most applications. Significant deviations from the factory settings can produce extreme color shifts and cause difficulty in setting up the LitePro.

1. Apply power to the LitePro but do not connect a video signal.

Note:

For optimum results, allow LitePro to warm up for 15 to 20 minutes before adjusting the color balance.

The LitePro will display a test pattern of a line grid and a series of color bars. With a white background, the colors are displayed left to right in the following order: black, red, blue, magenta, green, yellow, cyan, and white.

The pattern repeats five times across the LitePro screen. If the test pattern shows white lines on a black background, press Reverse.

2. Press Shift-Menu to display the User Menu.

You can adjust the colors by adding or subtracting red, green, and blue. Move a color bar up to add more of its color, or down to display less of its color.

You should only look at the red, green, and blue color bars when adjusting the color. These bars appear in the User Menu as follows:

Red
Green
Blue

3. Press Shift-Reset to reset to default contrast settings. If necessary, press Reverse to display dark lines on a white background.
4. Move the Red bar up until the red color bars are bright red and the background is still white. While moving the color bar up, the red will darken until the background also turns red. You should then back the control off until the background is white.
5. Move the Green bar up until the green color bars are bright green and the background is still white. While moving the color bar up, the green will darken until the background also turns green You should then back the control off until the background is white.
6. Move the Blue bar up until the blue color bars are bright blue and the background is still white. While moving the color bar up, the blue will darken until the background also turns blue. You should then back the control off until the background is white.
7. Press Reverse to ensure that the black background is solid and evenly dark. You may need to fine-tune the adjustment controls or the contrast button.

Note:

There will always be slight variations in color across the LCD.

Moiré

Many high resolution color displays are affected by a phenomenon called moiré (pronounced moray). A moiré is a faint, elliptical pattern that crosses through the viewing area of the screen. This pattern may appear in the center of the screen as half ellipses or in the corners as half bow ties. A moiré is caused by checkerboard patterns of alternating dark and light pixels, such as appear on a Macintosh desktop.

In many cases, you can remove the moiré by changing the background pattern to a solid color.

The two most common causes of moiré are the Macintosh desktop and Microsoft Windows. Both have control panels that allow you to change the pattern to a solid color. Refer to your software documentation for instructions on changing the background pattern.

Specifications

This appendix lists the LitePro product specifications. The LitePro must be operated within the limits of these specifications.

Temperature	
Absolute Maximum	–20 to 60° C (24 hours, non operating)
Operating Range	0 to 32° C
Humidity	
Non operating	40° C, 80% RH
Operating	30° C, 90% RH
Altitude	
Non operating	50,000 ft for 2 hours
Operating	20,000 ft for 4 hours
Vibration	
Non operating	.025 G^2/Hz in each of 3 major axes
Shock	
Non operating	30 Gs, front to back; 20 Gs, other axes, $^1/_2$ sine wave. 11 ms
Input power requirements	
120 – 240 Vac, 5 – 2.5 A, 50 – 60 Hz	
Weight	
19 lbs (unpacked)	

Special Guidelines for IBM & Compatibles

IBM Computers With Two Display Cards

If your computer has both a color and monochrome display, it may be necessary to turn on the color card. Because your computer will only display on one monitor at a time, you need to ensure that the color display is on when using the LitePro.

This is done in a variety of ways. Some computers require special commands other than MS DOS commands. The best reference for finding these commands is your computer manual.

See the next page for instructions on how to set up a color or monochrome display.

For most IBM and IBM compatibles:

1. Follow the instructions for setting up the LitePro.

2. Insert your MS DOS disk in drive A. (Skip this step if you have a hard drive.)

3. When the DOS prompt appears, type: **MODE CO80**
   (CO for color, the number 80 for 80 columns).

4. The color card should be activated.

   If you have a monochrome monitor and want to switch back, at the DOS prompt type: **MODE MONO**

   The LitePro will go off and your monochrome monitor will come on.

Portable and Laptop Activation Chart

Computer Models	Activate Port Key Command	De-Activate Key Command	Video Standard
Compaq portable 11	Ctrl Alt <	Ctrl Alt >	CGA
Compaq portable 111	Ctrl Alt <	Ctrl Alt >	CGA
Compaq SLT	Ctrl Alt <	Ctrl Alt >	VGA
Compaq LTE/286	Ctrl Alt <	Ctrl Alt >	CGA
Dell 316LT	Ctrl Alt F11	Ctrl Alt F10	VGA
Epson Lt	Switch for CRT On	Switch for LCD On	CGA
Epson 286e	Switch for CRT On	Switch for LCD On	EGA
Gridcase 1200 series	Active Port	N/A	CGA
Gridcase 1400 series	Ctrl Alt Tab	Ctrl Alt Tab	VGA
Gridcase 1520	Ctrl Alt Tab	Ctrl Alt Tab	CGA
Gridcase 1530	Ctrl Alt Tab	Ctrl Alt Tab	CGA
Gridcase 1535 EXP	Ctrl Alt Tab	Ctrl Alt Tab	CGA
IBM P70 386	Active Port	N/A	VGA
Mitsubishi	Sw2 on off off off	Sw2 off on on on	EGA
Packard Bell PB286Lt	Fn F10	Fn F10	EGA
Sharp PC-5541	Switch for CRT On	Switch for LCD On	VGA
Toshiba 1000	Fn End	Fn Home	CGA
Toshiba 1100	Ctrl Alt End	Ctrl Alt Home	CGA
Toshiba 1200, 1600	Fn End	Fn Home	CGA
Toshiba 3100	Ctrl Alt End	Ctrl Alt Home	CGA
Toshiba 3100-e	Ctrl Alt End	Ctrl Alt Home	EGA
Toshiba 3100sx	Active Port	N/A	VGA
Toshiba 3200sx	Active Port	N/A	VGA
Toshiba 3200	Fn End	Fn Home	EGA
Toshiba 5100	Ctrl Alt End	Ctrl Alt Home	EGA
Toshiba 5100/100	Active Port	N/A	EGA
Toshiba 5200	Active Port	N/A	VGA
Toshiba 5100/100	Active Port	N/A	VGA
Zenith 128, 170, 180, 181 183, 184, Supersport	Fn F10	Fn F10	CGA
Zenith Supersport 286e Supersport sx Supersport	Fn F10	Fn F10	VGA

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